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## Proposed Regulation Agency Background Document

<b>Approving authority name</b>	State Water Control Board
<b>Virginia Administrative Code (VAC) citation</b>	9 VAC 25-260
<b>Regulation title</b>	Water Quality Standards
<b>Action title</b>	Water Quality Standards Amendments to Protect Designated Uses from the Impacts on Nutrients and Suspended Sediments in the Chesapeake Bay and its Tidal Tributaries
<b>Document preparation date</b>	June 2004

This information is required for executive review ([www.townhall.state.va.us/dpbpages/apaintro.htm#exereview](http://www.townhall.state.va.us/dpbpages/apaintro.htm#exereview)) and the Virginia Registrar of Regulations ([legis.state.va.us/codecomm/register/regindex.htm](http://legis.state.va.us/codecomm/register/regindex.htm)), pursuant to the Virginia Administrative Process Act ([www.townhall.state.va.us/dpbpages/dpb\\_apa.htm](http://www.townhall.state.va.us/dpbpages/dpb_apa.htm)), Executive Orders 21 (2002) and 58 (1999) ([www.governor.state.va.us/Press\\_Policy/Executive\\_Orders/EOHome.html](http://www.governor.state.va.us/Press_Policy/Executive_Orders/EOHome.html)), and the *Virginia Register Form, Style and Procedure Manual* ([http://legis.state.va.us/codecomm/register/download/styl8\\_95.rtf](http://legis.state.va.us/codecomm/register/download/styl8_95.rtf)).

### Brief Summary

*Please provide a brief summary of the proposed new regulation, proposed amendments to the existing regulation, or the regulation proposed to be repealed. Alert the reader to all substantive matters or changes. If applicable, generally describe the existing regulation. Do **not** state each provision or amendment or restate the purpose and intent of the regulation.*

The proposed amendments will include updated numerical and narrative criteria to protect designated uses from the impacts of nutrients and suspended sediments in the Chesapeake Bay and its tidal tributaries. The rulemaking will include new and revised use designations for these waters. These amendments are additions to the existing water quality standards regulation, which contains numerical and narrative criteria to protect use designations statewide. These amendments are substantive in that the Chesapeake Bay and its tidal tributaries will have separate uses and nutrient related criteria from the rest of the state and to meet these new criteria, pollution sources upstream of the designated area must be controlled. Another substantive matter is the need for both point and nonpoint source reductions to meet these criteria; however, only point sources are regulated. Also, the cost and funding of meeting the requirements of the

regulation will generate substantive comment. The numerical chlorophyll *a* criteria for the James River is also likely to generate controversy and therefore, a substantive matter.

### Basis

*Please identify the state and/or federal source of legal authority to promulgate this proposed regulation, including (1) the most relevant law and/or regulation, including Code of Virginia citation and General Assembly bill and chapter numbers, if applicable, and (2) promulgating entity, i.e., the agency, board, or person. Describe the legal authority and the extent to which the authority is mandatory or discretionary.*

Federal and state mandates in the Clean Water Act at 303(c), 40 CFR 131 and the Code of Virginia in §62.1-44.15(3a) are the sources of legal authority identified to promulgate these amendments. The most relevant law is the Code of Virginia at §62.1-44.15(3a). The promulgating entity is the State Water Control Board.

The scope and objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The Clean Water Act at 303(c)(1) requires that the states hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards.

The scope of the Federal regulations at 40 CFR 131 is to describe the requirements and procedures for developing, reviewing, revising and approving water quality standards by the States as authorized by section 303(c) of the Clean Water Act 40 CFR 131 specifically requires the states to adopt criteria to protect designated uses.

The scope and purpose of the State Water Control Law is to protect and to restore the quality of state waters, to safeguard the clean waters from pollution, to prevent and to reduce pollution and to promote water conservation. The State Water Control Law (Code of Virginia) at §62.1-44.15(3a) requires the Board to establish standards of quality and to modify, amend or cancel any such standards or policies. It also requires the Board to hold public hearings from time to time for the purpose of reviewing the water quality standards, and, as appropriate, adopting, modifying or canceling such standards.

The correlation between the proposed regulatory action and the legal authority identified above is that the amendments being considered are modifications of criteria that will protect designated uses and criteria and designated uses are requirements of the Water Quality Standards.

The authority to adopt standards is mandated, although the specific standards to be adopted or modified are discretionary to the Environmental Protection Agency and the state.

Federal Regulation web site:

<http://www.epa.gov/epahome/cfr40.htm>

Clean Water Act web site:

<http://www4.law.cornell.edu/uscode/33/1313.html>

State Water Control Law (Code of Virginia) web site:

<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.2>

<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15>

**Purpose**

*Please explain the need for the new or amended regulation. Describe the rationale or justification of the proposed regulatory action. Detail the specific reasons the regulation is essential to protect the health, safety or welfare of citizens. Discuss the goals of the proposal and the problems the proposal is intended to solve.*

This rulemaking is needed to establish the appropriate uses and criteria for the Chesapeake Bay as the existing criteria and uses do not adequately protect the Bay from the effects of nutrient pollution and sedimentation. Adoption of Bay specific criteria and uses are necessary to define the most accurate living resource and water quality goals for tributary strategy development (see Code of Virginia § 2.2-219) and TMDL development. Virginia is also committed through Chesapeake 2000 to adopt new and revised water quality standards for the Bay. Changes to the regulation are also needed to meet EPA priorities for setting nutrient criteria.

Proper water quality standards protect water quality and living resources of Virginia's waters for consumption of fish and shellfish, recreational uses and conservation in general. Protection of water quality and living resources for food and recreation are essential to help maintain the health and welfare of the citizens of the Commonwealth.

The Bay partners with the U.S. Environmental Protection Agency (EPA) Chesapeake Bay program have worked together to publish nutrient related criteria and designated uses specific to the Chesapeake Bay. The goals of the proposal are to use these standards in calculating load allocations for the Chesapeake Bay Tributary Strategies, setting Virginia Pollutant Discharge Elimination System Permit limits and for evaluating the waters of the Commonwealth for inclusion in the Clean Water Act 305(b) report and on the 303(d) list. Waters not meeting standards will require development of a Total Maximum Daily Load (TMDL) under section 303(d) of the Clean Water Act. In May 1999, EPA Region III included Virginia's portion of the Chesapeake Bay and portions of several tidal tributaries on Virginia's 1998 Clean Water Act section 303(d) impaired waters list. The Chesapeake 2000 Agreement specifies a goal to remove the Chesapeake Bay and its tidal tributaries from the list of impaired water bodies for nutrient and sediments by 2010. Thus, the development of a TMDL for the entire Chesapeake Bay is not being scheduled until 2010 anticipating that the Chesapeake Bay Program partners can cooperatively achieve water quality standards by that time making a bay wide TMDL unnecessary.

**Substance**

*Please briefly identify and explain the new substantive provisions, the substantive changes to existing sections, or both where appropriate. (Provide more detail about these changes in the "Detail of changes" section.)*

The proposed regulatory action will constitute an amendment of existing regulatory provisions. The existing regulation currently designates all depths, areas and time periods of the Chesapeake

Bay and its tidal tributaries for aquatic life protection. Therefore, existing numerical criteria apply equally at all depths and in all areas of the Bay at all times. The proposed regulatory action will subcategorize existing aquatic life uses. Criteria will be proposed to protect the subcategorized and new uses.

### Issues

*Please identify the issues associated with the proposed regulatory action, including:*

- 1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions;*
- 2) the primary advantages and disadvantages to the agency or the Commonwealth; and*
- 3) other pertinent matters of interest to the regulated community, government officials, and the public. If there are no disadvantages to the public or the Commonwealth, please indicate.*

The public will benefit as these amendments will result in protection of the habitat, survival, growth and reproduction of aquatic life through the proper definition of their habitats (designated uses) and seasonal application of criteria specifically designed to protect the organisms living in those habitats. Another advantage and benefit to the public is that the updated criteria, once implemented fully, will result in restored water quality for dissolved oxygen, water clarity and chlorophyll *a* in the Chesapeake Bay and its tidal tributaries. Also, the living resources that were affected by nutrient enrichment and sedimentation will be restored. The disadvantage is that certain sectors of the public may see this as an attempt to “lower the bar” on water quality for the deeper waters of the Bay because the proposed instantaneous dissolved criteria are less stringent than existing. Other sectors of the public may see this proposal as too stringent and the criteria will be difficult and expensive to meet. However, the goal is to set realistic, protective goals in water quality management and to maintain the most scientifically defensible criteria in the water quality standards regulation.

The advantage to the agency is that the adoption of these criteria will be the first step in meeting the goals of the Chesapeake 2000 agreement which establishes that the jurisdictions with tidal waters will use their best efforts to adopt new or revised water quality standards consistent with the defined water quality conditions. This will allow the agency to making a realistic assessment of these tidal waters so that appropriate controls can be implemented.

The advantage to the Commonwealth is that the adoption of these criteria will define the necessary water quality and living resource goals needed for the development of tributary strategies as specified in the Code of Virginia § 2.2-219.

There is no disadvantage to the agency or the Commonwealth that will result from the adoption of these amendments.

Pertinent matters of interest to the regulated community, government officials, and the public are the potential costs to meet the requirements of this regulation.

### Requirements More Restrictive Than Federal

*Please identify and describe any requirement of the proposal which are more restrictive than applicable federal requirements. Include a rationale for the need for the more restrictive requirements. If there are*

*no applicable federal requirements or no requirements that exceed applicable federal requirements, include a statement to that effect.*

There is no requirement of the proposal that is more stringent than federal recommendations, guidance or regulation. Federal regulation requires states to adopt criteria to protect designated uses. The proposal accurately provides that protection in accordance with EPA guidance.

### Locality Particularly Affected

*Please identify any locality particularly affected by the proposed regulation. Locality particularly affected means any locality which bears any identified disproportionate material impact which would not be experienced by other localities.*

#### **EASTERN SHORE**

**Counties:**

Accomack, Northampton

**Cities/Towns:**

Accomac, Belle Haven, Bloxom, Cape Charles, Cheriton, Eastville, Exmore, Hallwood, Melfa, Nassawadox, Onancock, Onley, Painter, Parksley, Saxis, Tangier.

#### **JAMES RIVER BASIN**

**Counties:**

Albemarle, Alleghany, Amelia, Amherst, Appomattox, Augusta, Bath, Bedford, Buckingham, Botetourt, Campbell, Charles City, Chesterfield, Craig, Cumberland, Dinwiddie, Fluvanna, Giles, Goochland, Greene, Hanover, Henrico, Highland, Isle of Wight, James City, Louisa, Montgomery, Nelson, New Kent, Nottoway, Powhatan, Prince Edward, Prince George, Roanoke, Rockbridge, Surry

**Cities/Towns:**

Amherst, Appomattox, Buchanan, Buena Vista, Burkeville, Charlottesville, Chesapeake, Claremont, Clifton Forge, Colonial Heights, Colombia, Covington, Craigsville, Crewe, Dillwyn, Farmville, Fincastle, Glasgow, Goshen, Hampton, Hopewell, Iron Gate, Lexington, Lynchburg, New Castle, Newport News, Norfolk, Petersburg, Portsmouth, Richmond, Scottsville, Smithfield, Stanardsville, Suffolk, Surry, Virginia Beach, Williamsburg, Windsor

#### **YORK RIVER BASIN**

**Counties:** Albemarle, Caroline, Essex, Fluvanna, Gloucester, Goochland, Hanover, James City, King and Queen, King William, Louisa, Mathews, Middlesex, New Kent, Orange, Spotsylvania, York

**Cities/Towns:** Ashland, Bowling Green, Gordonsville, Mineral, Orange, West Point, Williamsburg

#### **RAPPAHANNOCK RIVER BASIN**

**Counties:** Albemarle, Caroline, Culpeper, Essex, Fauquier, Greene, King George, Lancaster, Madison, Middlesex, Northumberland, Orange, Rappahannock, Richmond, Spotsylvania, Stafford, Westmoreland

**Cities/Towns:** Culpeper, Fredricksburg, Irvington, Kilmarnock, Madison, Montross, Orange, Port Royal, Remington, Tappahannock, Urbanna, Warrenton, Warsaw, Washington, White Stone

**POTOMAC RIVER BASIN**

**Counties:** Arlington, Fauquier, Fairfax, King George, Loudoun, Northumberland, Prince William, Stafford, Westmoreland,

**Cities/Towns:** Alexandria, Arlington, Clifton, Colonial Beach, Dumfries, Fairfax (City of), Falls Church, Hamilton, Haymarket, Herndon, Hillsboro, Leesburg, Lovettsville, Manassas, Manassas Park, Middleburg, Occoquan, Purcellville, Quantico, Round Hill, The Plains, Vienna, Warrenton

**SHENANDOAH RIVER SUB-BASIN**

**Counties:** Augusta, Clarke, Frederick, Highland, Page, Rockingham, Shenandoah, Warren

**Cities/Towns:** Berryville, Boyce, Bridgewater, Broadway, Dayton, Edinburg, Elkton, Front Royal, Grottoes, Harrisonburg, Luray, Middletown, Monterey, Mount Crawford, Mount Jackson, New Market, Shenandoah, Stanley, Staunton, Stephens City, Strasburg, Timberville, Tom's Brook, Waynesboro, Winchester, Woodstock

**SMALL COASTAL RIVERS**

**Counties:** Essex, Gloucester, King and Queen, Lancaster, Mathews, Middlesex, Northumberland, York

**Cities/Towns:** Hampton, Kilmarnock, Newport News, Norfolk, Poquoson, White Stone

**Public Participation**

*Please include a statement that in addition to any other comments on the proposal, the agency is seeking comments on the costs and benefits of the proposal and the impacts of the regulation on farm or forest land preservation.*

In addition to any other comments, the Board is seeking comments on the costs and benefits of the proposal and on any impacts of the regulation on farm and forest land preservation.

Anyone wishing to submit written comments for the public comment file may do so at the public hearing or by mail, email or fax to Department of Environmental Quality, P.O. Box 10009, Richmond, VA, 23240-0009 (c/o Elleanore Daub), (804) 698-4111, fax (804) 698-4116, email [emdaub@deq.virginia.gov](mailto:emdaub@deq.virginia.gov) . Written comments must include the name and address of the commenter. In order to be considered comments must be received by the date established as the close of the comment period.

A public hearing will be held and notice of the public hearing can be found in the Calendar of Events section of the Virginia Register of Regulations. Both oral and written comments may be submitted at that time.

The Board will hold a formal hearing at a time and place to be established, if a petition for such a hearing is received and granted. Affected persons may petition for a formal hearing concerning

any issue of fact directly relevant to the legal validity of the proposed action. Petitions must meet the requirements of § 1.23(b) of the Board's Procedural Rule No. 1 (1980), and must be received by the contact person within 30 days of date of publication in the Virginia Register.

## Financial impact

Please identify the anticipated financial impact of the proposed regulation and at a minimum provide the following information: Projected cost to the state to implement and enforce the proposed regulation, including fund source / fund detail, and (b) a delineation of one-time versus on-going expenditures; projected cost of the regulation on localities; description of the individuals, businesses or other entities likely to be affected by the regulation including specific information on the impact on small businesses as defined in § 2.2-2279; agency's best estimate of the number of such entities that will be affected; projected cost of the regulation for affected individuals, businesses, or other entities.

**Projected cost to the state to implement and enforce the proposed regulation, including fund source / fund detail, and (b) a delineation of one-time versus on-going expenditures:** There may be costs to the state to update existing water quality models for the tributaries to determine new limits for oxygen demanding substances that have an effect in the receiving stream. Such efforts may involve water quality management updates or individual permit actions when permits are reissued. The funding source will be general funds. There is no additional cost to the state to implement and enforce the proposed regulation.

There may also be costs to the state to provide technical assistance to localities and private property owners to implement the best management practices needed to meet these standards. Some of these costs will be transferred to the Soil and Water Conservation Districts in Virginia. The costs for this technical assistance are outlined below in "Projected cost of the regulation for affected individuals, businesses, or other entities."

Funding opportunities to localities to upgrade their treatment facilities may be available from the Water Quality Improvement Fund and the Virginia Revolving Loan Fund. These funds are used to fund capital costs and best management practices to implement these criteria.

**Projected cost of the regulation on localities:** It was determined that the first step in determining costs to localities is to use the point source municipal costs listed in the tributary strategies. The tributary strategies list costs and treatment upgrades needed to meet these criteria and focus on significant dischargers. These cost estimates include costs to meet these water quality criteria in Maryland Bay waters since inputs of nutrients from Virginia also impact the quality of the Chesapeake Bay waters in Maryland. Likewise, Maryland as well as the other Bay states will incur costs to meet Virginia's water quality criteria. This is a watershed regulation and only considering the costs to meet Virginia's water quality criteria will result in underestimating the true cost and is not justified.

The point source costs are planning level figures and are accurate within (-)30% - (+)50%. More accurate costs could only be derived through specific facility planning, design and ultimately construction bids for the treatment upgrades.

Capital costs for municipal point sources for nutrient removal costs are estimated as follows:

Eastern Shore: \$9 million  
James Basin: \$424 million  
York Basin: \$26 million  
Rappahannock Basin: \$43 million  
Shenandoah/Potomac Basin: \$402 million  
Total municipal point source cost estimate is \$904 million.

Localities may also be impacted by non-point source costs related to both erosion and sediment control and stormwater control. However, these costs are not directly regulated or enforceable by this agency. Urban best management practice costs were determined to be the best estimate for locality costs related to these controls and are as follows:

Eastern Shore Basin: \$15 million  
James Basin: \$611 million  
York Basin: \$33 million  
Rappahannock Basin: \$45 million  
Potomac/Shenandoah Basin: \$344 million  
Total locality urban best management costs estimate is \$1 billion.

**Description of the individuals, businesses or other entities likely to be affected by the regulation including specific information on the impact on small businesses as defined in § 2.2-2279**

The entities likely to be impacted include point source permitted discharges greater than 0.5 million gallons per day (MGD) with nutrients and oxygen demanding substances in their discharge. This includes sewage treatment plants, food processing (poultry and seafood), chemical and pulp and paper industries.

Small businesses that may be impacted include seafood processors that discharge directly to the Bay or its tidal tributaries. There are currently 87 permitted seafood processors in Virginia with Virginia Pollutant Discharge Elimination System Permits. Currently, all but 2 of these are covered under the General Virginia Pollutant Discharge Elimination System (VPDES) permit for Seafood Processing Facilities 9VAC25-115-50 and most are small businesses. These facilities may not qualify for a general permit after these amendments are effective because the general permit does not include nutrient related limits. Exactly if or how these small businesses will be impacted is unknown at this time. There is one small business that is currently on the list of significant discharges that will be subjected to nutrient related limits (J.H. Miles and Co., Inc, Norfolk, VA).

There may be other small businesses throughout the Bay watershed that may be impacted by these amendments. See discussion of smaller discharges containing nutrient related constituents below.

**Agency's best estimate of the number of such entities that will be affected** Including all the municipal and industrial Virginia Pollutant Discharge Elimination System (VPDES) permit holders, the best estimate of affected entities is 118 (20 industrial facilities and 98 municipal facilities). This estimate is based on the significant discharges listed in the tributary strategies. There are also a number of smaller facilities that contain nutrient related constituents in their discharge but the nutrient loading from these facilities are considered insignificant, were not included in the tributary strategies and are not included in this estimate. These include sewage

treatment plants less than 0.5 million gallons/day owned by towns, schools, rest areas, correctional facilities, churches, businesses (trailer courts, hotels, marinas, campgrounds) and industries with insignificant nutrient related constituents in their discharge (seafood processing, other food processors (e.g. dairy, meat), chemical and pulp and paper industries). These smaller facilities may be impacted by the Point Source Technology regulation currently under development

(<http://www.townhall.state.va.us/chapter/ViewChapter.cfm?Vac=196&Chapter=40>).

**Projected cost of the regulation for affected individuals, businesses, or other entities** See costs projected above for significant municipal point sources. Like the municipal costs, these cost estimates include costs to meet these water quality criteria in Maryland Bay waters.

Industrial costs for significant discharges are estimated as follows:

Eastern Shore Basin: Tyson Foods/Temperanceville/Accomack \$7,000

James Basin: Brown and Williamson \$942,000

BWXT \$3,400,000

DuPont Spruance \$0

Georgia Pacific \$2,800,000

Greif Bros. \$3,300,000

Honeywell-Hopewell \$0

J.H. Miles \$3,900,000

Lees Carpet \$2,200,000

Phillip Morris-Park 500 \$3,500,000

Tyson Foods-Glen Allen \$150,000

Westvaco Corp. \$1,600,000

York Basin: Giant-Yorktown \$3,500,000

Smurfit Stone \$0

Rappahannock Basin: Omega Seafood \$4,800,000

Potomac/Shenandoah Basin: Adolf Coors \$3,900,000

DuPont-Waynesboro \$0

Georges Chicken \$0

Merck-Elkton \$800,000

Pilgrims Pride-Hinton \$7,800,000

Total industrial point source costs estimate \$42,600,000.

To meet these criteria, nutrient reductions will also be needed from non-point sources. The non-point sources are not regulated and costs are taken on voluntarily. Costs for non-point source include best management practices for agriculture, urban, mixed open, forest and septic. Also included in parenthesis below are technical assistance costs to implement the best management practices (see "projected cost to state" above). Non-point costs are as follows:

Eastern Shore Basin: \$32 million (\$5 million)

James Basin \$1 billion (\$121 million)

Rappahannock: \$128 million (16 million)

York: \$119 million (\$14 million)

Shenandoah/Potomac: \$664 million (\$91 million)

Total non-point source cost estimate is \$2.2 billion.

## Alternatives

*Please describe any viable alternatives to the proposal considered and the rationale used by the agency to select the least burdensome or intrusive alternative that meets the essential purpose of the action.*

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The following were alternatives considered by DEQ staff and discussed with the technical advisory committee that was formed as part of the participatory process. The EPA criteria and designated use publications referred to below are *Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its Tidal Tributaries*, April 2003 and the *Technical Support Document for the Identification of Chesapeake Bay Designated Uses and Attainability, 2003*. (<http://www.chesapeakebay.net/baycriteria.htm>). The agency believes that the proposed regulation is the least burdensome alternative to the regulated community that fully meets the stated purpose of the proposed regulation.

### Use Designations

- Whether the use boundaries for migratory and spawning fishes should be extended to include potential spawning areas considered whether the boundaries in the Pianktank should be extended. It was determined that the potential spawning areas were not appropriate since they also included migration pathways and not spawning areas and the boundaries as published by EPA were appropriate.
- Whether the open and deep-water aquatic life uses should represent fish and shellfish uses or should they represent all aquatic life uses. It was decided that these two uses should reflect all aquatic life uses to be consistent with the existing general aquatic life use designations. The other uses reflect a specific aquatic life use (migratory, nursery and spawning, submerged aquatic vegetation in shallow-water and benthic fauna in deep channels).
- Whether the horizontal deep-water use boundaries were appropriate. EPA published new information, which DEQ accepted, to adjust the deep water boundaries in CB6, in the Rappahannock and in the Elizabeth River.
- Whether the shallow-water designated use should cover tidally influenced waters from the intertidal zone to a Chesapeake Bay Program segment-specific depth contour from 0.5 to 2 meters as published by EPA or to dispense with the use of a depth contour for delineating the shallow water use. It was decided that the varying depth contour approach was too complicated. The shallow-water use is defined narratively as those waters that support submerged aquatic vegetation (SAV) and the primary measure of use attainment is through direct measurement of the acres of SAV. There is another measure of attainment (water clarity) described below.

### Criteria

- Whether the less stringent dissolved oxygen criteria published by EPA for open water (i.e. instantaneous minimum 3.2 mg/l) be proposed in the VA open water portions of the Chesapeake Bay or should the existing Virginia criteria (i.e. instantaneous minimum 4.0 mg/L) be retained in proposed open water areas. It was decided to adopt the EPA criteria as published in order to be consistent with the other Bay states, but to reinforce the antidegradation policy to ensure that higher quality waters must be maintained where the instantaneous quality was better than 3.2 mg/l by way of a footnote.

- Whether the 5.0 mg/l as an instantaneous minimum was appropriate for the migratory spawning and nursery areas. It was decided that these criteria are appropriate because growth effects can occur during very short spawning nursery life stage windows.
- Whether the EPA published dissolved oxygen criteria are appropriate for waters inundated with naturally low dissolved oxygen waters from extensive surrounding tidal wetlands (e.g. Mattaponi and Pamunkey). It was decided to propose alternative criteria for these waters to reflect the naturally occurring lower dissolved oxygen concentrations.
- Whether these criteria should apply to small tidal creeks and embayments to their head of tide. It was decided that these criteria are protective of uses in those waters and should be adopted as published. Any variations from EPA criteria must be handled through a site-specific criterion or use attainability assessment.
- Whether numerical criteria for water clarity as published by EPA should be proposed or biological criteria expressed in acres of submerged aquatic vegetation (SAV) or some combination of a biological SAV criteria with water clarity criteria should be proposed. It was decided to provide two criteria (SAV acres and water clarity) to measure attainment of the shallow-water use since there are reasons unrelated to water clarity that affects the growth of SAV.
- Whether the temporal application period for SAV in polyhaline areas should be extended to include the growing season associated with widgeon grass (a species typically associated with mesohaline areas). It was decided that widgeon grass are present or are potentially able to grow in all polyhaline areas, so the temporal application period was extended to protect this species.
- Whether the SAV acres published by EPA were appropriate. It was decided that in segments where the modeling data clearly showed non-attainment of the SAV acres after implementation of the agreed upon cap loads, then the SAV criteria in those segments should reflect what is attainable.
- Whether the water clarity criteria should apply to the same number of acres listed for SAV or if some factor must be applied to increase the number of water clarity acres where the water clarity criteria applied. It was decided that a factor of 2.5 would be applied to the SAV acres to determine the number of water clarity acres. This is consistent with the published literature.
- Whether chlorophyll *a* criteria would be beneficial to resource protection in the Bay if water clarity and dissolved oxygen criteria are proposed to reduce the nutrient inputs. It was decided that a narrative chlorophyll *a* criteria for the entire Bay and tidal tributaries is necessary to maintain consistency with the other Bay states but that a numerical chlorophyll *a* was needed in the James River. The James has good dissolved oxygen concentrations; however, algal related impairments are present. A numerical chlorophyll *a* criterion was deemed necessary to define the necessary water quality in this system.

### **Implementation**

- Whether, due to the unique nature of these criteria (interstate waters, large watershed, expected high implementation costs), DEQ should consider adopting policies in the standards to address implementation or should they be placed in agency guidance. It was decided that a limited amount of implementation requirements should go in the regulation (the Bay program segmentation used for assessments, the time period to use to do assessment, the cumulative frequency distribution methodology for determining attainment and a

requirement that meeting these criteria in the Bay and tidal tributaries may require nutrient reductions from discharges outside of tidal waters).

- Whether a 3-year time period or an alternative return frequency should be used to do assessments, particularly for measuring attainment of the SAV criteria. It was decided that the SAV criteria could be attained in 3-year period, as there is little variability in SAV acres from year to year and changes will occur gradually. Also, if the SAV acres are not attained, there is a second measure of attainment provided through the water clarity criteria.
- Whether the Chesapeake Bay Program segmentation scheme was appropriate or if some subdivisions were needed. It was decided that the James River tidal fresh segment (JMSTF) should be sub-divided into an upper segment (JMSTF2) and a lower segment (JMSTF1). The upper segment which extends from Richmond to Hopewell (JMSTF2) is narrower, faster flowing (shorter residence time), and with much greater average depth. The river widens from approximately 0.4 miles across at the end of JMSTF2 to as much as 1.6 miles shortly downriver in the JMSTF2 region of Hopewell and also the Appomattox River enters the James here. There are much wider shoals and greater photic zone area due to the increased width/depth ratio. These natural physical differences justified the subdivision of the JMSTF segment.

#### **Other**

- Whether the existing Policy for Nutrient Enriched Waters Policy (9 VAC 25-40-10 et seq.) or the Designation of Nutrient Enriched Waters (9 VAC 25-260-350) should be revised to remove the Chesapeake Bay and tidal tributaries from the list of nutrient enriched waters. It was decided to remove these waters from the list since nutrient reductions would be controlled via implementation of these new criteria.

### Public comment

*Please summarize all public comment received during 30-day period following the publication of the NOIRA, and provide the agency response.*

Comments were received from the Chesapeake Bay Foundation, the Environmental Protection Agency, Hanover County Department of Public Utilities, the Hampton Roads Planning District Commission, the Lower James River Watershed Roundtable, the Virginia Association of Counties, the Virginia Association of Municipal Wastewater Agencies, the Virginia Manufacturers Association, the Virginia State Dairymen's Association and Zicht Engineering, Limited

#### General Comments:

- Most supported the adoption of accurate water quality goals.
- Environmental groups do not want us to consider the cost of the regulation but the regulated community wants us to consider the cost to meet these criteria.
- There is general agreement as to the five subcategories of designated uses but some disagreement from the regulated community on the spatial boundaries.
- DEQ should be careful of the broad application of these standards.
- Some specific aspects of the recommended criteria are not defensible (e.g. there are no margins of safety).
- Natural conditions should not be interpreted as water quality standards violations.
- Reductions of nitrogen and phosphorus may yield few benefits in relation to the cost.

- Six groups asked to participate on a technical advisory committee.

Comments in Response to Criteria and Uses:

- The existing dissolved oxygen criteria are not defensible.
- Naturally occurring low dissolved oxygen in waters with extensive surrounding tidal wetlands must be addressed.
- Do not propose a submerged aquatic vegetation acreage (SAV) as a biological criterion - use this as a translator for the water clarity criteria.
- General agreement with EPA's recommendations for application depths of the shallow water use but there were concerns with using .5 M as a default depth and 2 M as a maximum depth.
- Include the turbidity maximum zones as SAV no-grow zones.
- The no-grow SAV areas may change over time and the board should allow responses to that.
- Do not include an SAV biological criterion - use this acreage as an assessment tool.
- Apply 'margins of safety' to all the criteria.
- Using single best year for a SAV restoration goal is not appropriate - better to use multiple year average acreage over various hydrological conditions.
- The regulated community did not want a numerical chlorophyll *a* criterion but the environmental groups did - preferably Bay wide.
- Include numerical chlorophyll *a* criteria for all waters since a narrative criterion is difficult to implement and enforce.
- Include numerical chlorophyll *a* criteria since algal impacts can impact living resources by shifting the balance of phytoplankton species or foster growth of harmful species without yielding impacts to D.O. or clarity.
- Chlorophyll *a* numerical criteria should be based on historical levels since no margins of safety were applied and existing uses must be protected.
- No evidence that chlorophyll *a* necessary beyond the protection provided by the dissolved oxygen and water clarity criteria.
- There is no link to food quality and the scientists could not demonstrate chlorophyll *a* as a useful management tool for harmful blooms.
- Chlorophyll *a* is a good monitoring parameter for interpretation of D.O. and clarity effects but not as a criterion.
- No site-specific criterion for chlorophyll *a* needed - the numerical ranges discussed in the EPA criteria document are based on trophic classifications and reference conditions with no direct link to designated uses
- To control chlorophyll DEQ should use adaptive management approach (implement D.O./clarity first and monitor aspect of chlorophyll *a* narrative (aesthetics, HABs))
- The numerical recommendations for chlorophyll presented in criteria document are not appropriate.
- Chlorophyll *a* better used as an indicator of when to expect water quality problems (like NC) rather than as a criterion.
- Too little chlorophyll *a* will impair aquatic life uses (not enough food).
- Adopt the EPA recommendations as published in the *Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll *a* for the Chesapeake Bay and its Tidal Tributaries* (U.S. EPA 2003).
- Adopt the EPA recommendations as published in the *Technical Support Document for the Identification of Chesapeake Bay Designated Uses And Attainability* (U.S. EPA 2003)

Comments in Response to Implementation

- The issue of how much implementation should go in the regulation was varied. Some agreed a small amount of implementation requirements should go in the regulation and others wanted very detailed implementation rules in the regulation.
- Put implementation information in guidance as is currently done with other agency 'tools.'
- Regulated community generally in favor of the use of cumulative frequency distributions (CFD) but correct deficiencies first (modeled data = questionable reliability).
- The CFD approach is too complicated - consider using 10% rule as is done currently.
- Consider the magnitude of violation not just the violation rate over space and time (as is currently done with the CFD approach).
- Only 30-day duration CFDs examined in the criteria document - need CFDs for all duration criteria.
- The use of CFDs will allow more non-attainment and this will not lead to improvements in bay water quality.
- With no margins of safety in the criteria, the CFDs must be strictly adhered to as a definitive line of attainment.
- The CFD reference curves are inappropriate because they are based on reference stations in an already impaired Bay.
- It is inappropriate to calculate a percentage of volume in a cell that exceeds criteria, and then extrapolate this data to much larger areas; this could have the effect of saying an entire assessment unit is in compliance when, in fact, large parts of the assessed unit do not meet water quality standards.

#### Other Comments

- The portion of the Bay listed as nutrient enriched could be removed from the nutrient enriched waters listing after the adoption of the new Bay criteria.

**Agency Response:** The agency response to the public comments is that we implemented the participatory approach and convened a technical advisory committee to advise staff on these amendments. All comments were discussed in the advisory committee and where appropriate, changes were made (see alternatives). Although there were generally two opposing viewpoints for most issues, the Board attempted to draft amendments that they believe to be reasonable, environmentally protective and technically accurate.

### Impact on family

*Please assess the impact of the proposed regulatory action on the institution of the family and family stability including to what extent the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one's spouse, and one's children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.*

The proposed regulatory action may decrease the disposable family income as localities upgrade their treatment facilities and pass the increased water and sewer costs to the ratepayers.

### Detail of changes

Please detail all changes that are being proposed and the consequences of the proposed changes. Detail all new provisions and/or all changes to existing sections.

If the proposed regulation is intended to replace an emergency regulation, please list separately (1) all changes between the pre-emergency regulation and the proposed regulation, and (2) only changes made since the publication of the emergency regulation.

For changes to existing regulations, use this chart:

Current section number	Proposed new section number, if applicable	Current requirement	Proposed change and rationale
9 VAC 25-260-5		Definitions	Added a definition for 'Chesapeake Bay and its tidal tributaries' to clarify that this phrase refers to the tidal waters in the Bay watershed to the head of the tidal influence. Added a definition for 'pycnocline' as this is a term that is unfamiliar to the general public.
9 VAC 25-260-10		Defines general statewide designated uses.	Added subcategories of general statewide aquatic life designated uses that apply to the Chesapeake Bay and its tidal tributaries in order to more accurately reflect aquatic life uses in the Bay. These subcategories of uses are migratory fish spawning and nursery, submerged aquatic vegetation shallow-water, open-water aquatic life, deep-water aquatic life and deep channel seasonal refuge.
9 VAC 25-260-50		Lists dissolved oxygen, pH and temperature criteria for Class I - VII waters.	Separates Class II tidal waters of the Chowan and Atlantic from the Chesapeake Bay and its tidal tributaries. Provides a reference for the Chesapeake Bay waters to a new section. The new section contains the new dissolved oxygen criteria for these waters.
none	9 VAC 25-260-185	None since this is a new section - but the existing criteria for the Bay are statewide in nature and include a dissolved oxygen criteria of and minimum of 4.0 mg/l and a daily average of 5.0mg/l.	Provides new dissolved oxygen, submerged aquatic vegetation, water clarity and a narrative chlorophyll a criteria for the five new subcategories of uses as appropriate. Provides references to site-specific criteria for dissolved oxygen and numerical chlorophyll a, provides implementation requirements for assessments and permitting.
9 VAC 25-260-310		Contains site-specific and effluent criteria for various water bodies.	Adds two new site-specific criteria. One is a dissolved oxygen seasonal open water criteria for the Mattaponi and Pamunkey Rivers. Dissolved oxygen concentrations are lower here due to the natural oxygen depleting processes present in the extensive surrounding tidal wetlands. The second is a numerical chlorophyll a criteria for the James River. The James continues to show algal

			related impairments even though dissolved oxygen levels are good. In these instances EPA and DEQ think that numerical criteria are necessary to reduce the level of nutrients into the system.
9 VAC 25-260-350		The Chesapeake Bay and its tidal tributaries are listed as "nutrient enriched waters." Waters listed in this section are subject to phosphorus limits under the Nutrient Enriched Waters Policy (9 VAC 25-40 et seq.)	The Chesapeake Bay and its tidal tributaries are repealed from the list of nutrient enriched water since the new method of controlling nutrients will be from implementation of the criteria set forth in 9 VAC 25-260-185.
9 VAC 25-260-410		Subsections 1 and 1o of this section reference special standards a and z.	Subsections 1 and 1o of this section reference special standards a, z and bb because bb is the new special standard for chlorophyll a in the James River. All special standards that apply to a particular subsection are listed in this column.
9 VAC 25-260-530		Subsection 1 of this section references special standard a.	Subsection 1 of this section references special standard a and aa because aa is the new special standard for dissolved oxygen in the Mattaponi and Pamunkey Rivers. All special standards that apply to a particular subsection are listed in this column.